

Materials –related Patents Pending-- NASA LaRC 2009

Case Number	New Technology Report Title
LAR-15348-2-DE	Thin Layer Composite Unimorph Ferroelectric Driver And Sensor
LAR-15348-2-EP	Thin Layer Composite Unimorph Ferroelectric Driver And Sensor (Continuing App Of LAR 15348-1)
LAR-15412-1-JP	Imide Oligomers And Co-Oligomers Containing Pendent Phenylethynyl Groups And Polymers Therefrom
LAR-15745-1-JP	Films, Preimpregnated Tapes And Composition Made From Polyimide "Salt-Like" Solutions
LAR-15767-1-JP	Polyimide Precursor Solid Residuum
LAR-15816-1-JP	Piezoelectric Macro-Fiber Composite Actuator And Method For Making Same
LAR-15816-2-IL	Piezoelectric Macro-Fiber Composite Actuator And Manufacturing Method
LAR-15831-1-DE	Hollow Polyimide Microspheres
LAR-15834-1-JP	Composition Of And Method For Making High Performance Resins For Infusion And Transfer Molding Processes
LAR-15977-1-JP	Aromatic Polyimide Foam
LAR-16001-1-PCT	Catalyst For Treatment And Control Of Post-Combustion Emissions
LAR-16079-1-JP	Liquid Crystalline Thermosets From Ester, Ester-Imide, And Ester-Amide Oligomers
LAR-16289-1-JP	Electro-Active Transducer Using Radial Electric Field To Produce/Sense Out-of-Plane Transducer Motion
LAR-16299-1	Composite Roll Press And Processes
LAR-16307-2	Methodology For The Effective Stabilization Of Tin-Oxide-Based Oxidation/Reduction Catalysts
LAR-16308-1-CU	Catalyst For Decomposition Of Nitrogen Oxides
LAR-16383-1-NP	Electrically Conductive, Optically Transparent Polymer/Carbon Nanotube Composites And Process For Preparation Thereof
LAR-16432-1	Synthesis Of Carbon Nanotubes Using High Average Power Ultrafast Laser Ablation
LAR-16499-1	Method for the controlled deposition and alignment of single walled carbon nanotubes

LAR-16543-1	Method To Induce Polarization In Electroactive Polymers
LAR-16555-1	A Process For The Simultaneous Formation Of Surface And Sub-Surface Metallic Layers In Polymer Films
LAR-16615-2	Polyimide Foams
LAR-16616-1	Laser-Induced Fabrication Of Metallic Interlayers And Patterns In Polyimide Films
LAR-16845-1	Advanced Thermo-Electric Materials with Nano-Voids
LAR-16867-2	Sensing/Actuating Materials Made From Carbon Nanotube Polymer Composites And Methods For Making Same
LAR-16868-1-PCT	Silicon Germanium Semiconductive Alloy And Method Of Fabricating Same
LAR-16872-1	Graded Indexed SiGe Layers on Lattice Matched SiGe Layers on Sapphire
LAR-16872-1-PCT	Graded Index Silicon Germanium On Lattice Matched Silicon Germanium Semiconductive Alloy
LAR-16874-1	Novel Aromatic/Aliphatic Diamine Derivatives For Advanced Compositions And Polymers
LAR-16886-1-PCT	Method And System For Sensing And Identifying Foreign Particles In A Gaseous Environment
LAR-16906-1	Fabrication of Nanovoid-imbedded Bismuth Telluride with Low Dimensional System
LAR-16920-1	Fabrication of Advanced Thermoelectric Materials by Hierarchical Nanovoid Generation
LAR-16958-1	Fabrication of Multilayer Ferritin Array for Bionanobattery
LAR-17044-1	Applications Of Twin-Detection XRD Methods On SiGe (111) Layers On Sapphire (0001) Substrate
LAR-17044-1-PCT	Method Of Generating X-Ray Diffraction Data For Integral Detection Of Twin Defects In Super-Hetero-Epitaxial Materials
LAR-17073-1	Interdigitated Electrode Actuators For Straining Optical Fibers (IDEAS)
LAR-17082-1	Multifunctional Composites
LAR-17082-1-PCT	Composite Material Having A Thermally-Reactive-Endcapped Imide Oligomer And Carbon Nanofillers
LAR-17087-1	Synthesis Of Polymers That Self-Heal Upon Bullet Penetration
LAR-17088-1	Nanotubular Toughening Inclusions For Improved Mechanical Reinforcement
LAR-17112-1	Multi-Layer Electroactive Devices
LAR-17126-1	A Method For Producing Stable Dispersions Of Single Walled Carbon Nanotubes In Polymer Matrices Using Noncovalent

	Interactions
LAR-17134-1	Fabrication of Metallic Hollow Nanoparticles
LAR-17135-1	Fabrication of Metal Nanoshells Derived by a Biotemplate
LAR-17149-1	A Method For Producing Multifunctional Structural Thermally Stable Nanocomposites With Aligned Carbon Nanotubes
LAR-17151-1	Post-Process For Increasing Conductivity Of Thin Metal Films
LAR-17151-2	Thin Metal Film System To Include Flexible Substrate And Method Of Making Same
LAR-17154-1	Sprayable Low Temperature Oxidation Catalyst Coating Based on Sol-Gel Technology
LAR-17157-1	Liquid Crystalline Thermosets From Ester, Ester-Imide, And Ester-Amide Oligomers
LAR-17165-1	Method To Prepare Hybrid Metal/Composite Laminates By Resin Infusion
LAR-17165-1-PCT	Resin Infusion Of Layered Metal/Composite Hybrid And Resulting Metal/Composite Hybrid Laminate
LAR-17168-1	Cylindrical Shaped Micro Fiber Composite (CMFC) Actuators
LAR-17185-1	Epitaxial Growth of Group IV Semiconductor Alloys on Basal Plane of Trigonal or Hexagonal Crystal
LAR-17185-1-PCT	Epitaxial Growth of Cubic Crystalline Semiconductor Alloys on Basal Plane of Trigonal or Hexagonal Crystal
LAR-17224-1	Effective Dispersion of Carbon Nanotubes in an Aqueous Solution and Their Application on Bionanotechnology
LAR-17224-1-PCT	Aqueous Solution Dispersment of Carbon Nanotubes
LAR-17238-1	Advanced Carbon Nanotube Electrodes for Biofuel Cell and Fuel Cell Applications
LAR-17238-1-PCT	Carbon Nanotube Electrodes and Method for Fabricating Same for use in Biofuel Cell and Fuel Cell Applications
LAR-17267-1	Method of Depositing Metals onto Carbon Allotropes and Compositions Therefrom
LAR-17321-1	Ultra High-Temperature, Lightweight Insulation Material Compositions And Methods For Making And Using Them
LAR-17321-1-PCT	Composite Insulated Conductor
LAR-17330-1	Multi Functional Composite And Honeycomb Panels
LAR-17330-1-PCT	Composite Panel With Reinforced Recesses

LAR-17346-1	Thermoelectric Devices From Thin Metal System To Include Flexible Substrate And Method Of Making Same
LAR-17366-1	A Method For Producing Stable Dispersions Of Single Walled Carbon Nanotubes In Polymer Matrices Using Dispersion Interaction
LAR-17366-1-PCT	Nanocomposites From Stable Dispersions Of Carbon Nanotubes In Polymeric Matrices Using Dispersion Interaction
LAR-17366-1-TA	Nanocomposites From Stable Dispersions Of Carbon Nanotubes In Polymeric Matrices Using Dispersion Interaction
LAR-17381-1	Thermoelectric material made with highly oriented twinned alloy of Si, Ge, C, and Sn on the basal plane of trigonal substrate and thermoelectric device made with the same material
LAR-17381-1-PCT	Thermoelectric Materials and Devices
LAR-17402-1	Wholly Aromatic Liquid Crystalline Polyetherimide (LC-PEI) Resin for manufacturing high modulus fibers, films, injection molded articles and foams
LAR-17402-1-PCT	Wholly Aromatic Liquid Crystalline Polyetherimide (LC-PEI) Resins
LAR-17413-1	Composition of and method to prepare nanoparticle / nanofiber containing thermoplastic composite tape/tow and method to prepare composite laminates therefrom.
LAR-17427-1	Tailorable Dielectric Materials with Complex Permittivity Characteristics providing High Dielectric Constants and Low Loss Factors
LAR-17427-1-PCT	Tailorable Dielectric Material with Complex Permittivity Characteristics
LAR-17455-1	All-Organic Electroactive Device Fabricated With Single Wall Carbon Nanotube Film Electrode (SWNT-FE)
LAR-17455-1-PCT	A Carbon Nanotube Film Electrode And An Electroactive Device Fabricated With The Carbon Nanotube Film Electrode And A Method For Making Same
LAR-17477-1	Auxiliary Electrode For Electrospinning Process
LAR-17477-1-PCT	Method and System for Aligning Fibers During Electrospinning
LAR-17485-1	Composition of and Method to Prepare Hybrid Laminates from Metal Plasma Coated Fibers and Polymer Matrix Resins
LAR-17485-1-PCT	Metal/Fiber Laminate and Fabrication Using A Porous Metal/Fiber Preform
LAR-17493-1	Conducting Nanotubes Or Nanostructures Based Composites, Method Of Making Them And Applications
LAR-17493-1-PCT	Conducting Nanotubes Or Nanostructures Based Composites, Method Of Making Them And Applications

LAR-17494-1	Templated Growth Of Carbon Nanotubes
LAR-17548-1	Fail Safe High-Temperature Composite Structure
LAR-17553-1	NEW RHOMBOHEDRAL ALIGNMENT OF CUBIC SEMICONDUCTOR ON TRIGONAL SUBSTRATE AT A HIGH TEMPERATURE
LAR-17553-1-PCT	Rhombohedral Cubic Semiconductor Materials On Trigonal Substrate with Single Crystal Properties and Devices Based on Such Materials
LAR-17554-1	X-ray Diffraction Wafer Mapping Method for Rhombohedral Super-Hetero-Epitaxy
LAR-17554-1-PCT	X-ray Diffraction Wafer Mapping Method For Rhombohedral Super-Hetero-Epitaxy
LAR-17558-1	Thermal Conductive Polymeric Composites
LAR-17606-1	Metallized Nanotube Polymer Composite (MNPC) And Methods For Making Same
LAR-17608-1	Methodology for calculating fiber distribution during electrospinning
LAR-17608-1-PCT	Methodology For Predicting and Optimizing System Parameters for Electrospinning System

Materials –related Active Patents-- NASA LaRC 2009

Case Number	New Technology Report Title
LAR-14155-1-SB	Platinum/Tin Oxide/Silica Gel Catalyst for CO Oxidation
LAR-14155-2-SB	Catalyst For Carbon Monoxide Oxidation
LAR-14639-1	Low Toxicity High Temperature PMR Polyimide
LAR-14643-1-CU	Polybenzimidazoles Via Aromatic Nucleophilic Displacement
LAR-14643-2-CU	Di(hydroxyphenyl)- Benzimidazole Monomers
LAR-14924-1-CU	Polybenzimidazoles Via Aromatic Nucleophilic Displacement
LAR-14924-2-CU	Polybenzimidazoles Via Aromatic Nucleophilic Displacement
LAR-14987-3	Low Dielectric Polyimides
LAR-14988-1	Structures From Low Dielectric Polyimides

LAR-15175-1	Phenylethynyl Terminated Imide Oligomers
LAR-15175-2	Phenylethynyl Amine
LAR-15176-1-CU	Imide Oligomers Encapped With Phenylethynyl Phthalic Anhydrides And Polymers Therefrom
LAR-15176-3-CU	Imide Oligomers Encapped With Phenylethynyl Phthalic Anhydrides & Polymers Therefrom
LAR-15176-4-CU	Imide Oligomers Encapped With Phenylethynyl Phthalic Anhydrides And Polymers Therefrom
LAR-15205-1	Tough, Soluble, Aromatic, Thermoplastic Copolyimides
LAR-15205-2	Process For Preparing Tough, Soluble, Thermoplastic Copolyimides
LAR-15208-1	Copolyimides Prepared From 3,4'-oxydianiline And 1,3-Bis(3-aminophenoxy) Benzene..
LAR-15279-1	Thermally Stable, Piezoelectric And Pyroelectric Polymeric Substrates And Method Relating Thereto
LAR-15279-2	Thermally Stable Piezoelectric Polymeric Substrates And Method Relating Thereto
LAR-15279-3	Thermally Stable, Piezoelectric And Pyroelectric Polymeric Substrates And Method Relating Thereto
LAR-15348-1	Thin Layer Composite Unimorph Ferroelectric Driver And Sensor, THUNDER
LAR-15348-2	Thin Layer Composite Unimorph Ferroelectric Driver And Sensor
LAR-15351-1-CU	Catalyst For Formaldehyde Oxidation
LAR-15412-1	Imide Oligomers And Co-Oligomers Containing Pendent Phenylethynyl Groups And Polymers Therefrom

LAR-15412-2	Imide Oligomers And Co-Oligomers Containing Pendent Phenylethynyl Groups And Polymers Therefrom
LAR-15449-1	A Method To Prepare Processable Polyimides With Reactive Endgroups Using 1,3 Bis (3-Aminophenoxy) Benzene
LAR-15449-2	Method To Prepare Processable Polyimides With Reactive Endgroups Using 1,3-Bis(3-Aminophenoxy)Benzene
LAR-15652-1-CU	Catalyst For Oxidation Of Hydro-Carbons And Volatile Organic Compounds
LAR-15745-1	Prepreg And Composites Made From Polyimide "Salt-Like" Solution
LAR-15767-1	Polyimide Foam From Ether-Containing Monomeric Solutions
LAR-15816-1	Macro-Fiber Composite Actuator With Interdigitated Electrodes
LAR-15816-2	A Method For Fabricating A Piezoelectric Composite Apparatus
LAR-15831-1	Hollow Polyimide Microspheres
LAR-15831-2	Hollow Polyimide Microspheres
LAR-15831-3	Hollow Polyimide Microsphere
LAR-15834-1	High Performance / High Temperature Resins For Infusion And Transfer Molding Processes
LAR-15851-1-CU	Process For Coating Substrates With Catalyst Materials
LAR-15941-1	Tough, Soluble, Aromatic, Thermoplastic, Copolyimides
LAR-15960-1	Electrostrictive Polymer-Polymer Bi-Layer Actuator
LAR-15977-1	Polyimide Foam From Monomeric Solutions
LAR-15990-1	Dual Transmission Interface For Passive Fetal Heart Monitoring

LAR-16001-1	Catalyst For Treatment And Control Of Post-Combustion Emissions
LAR-16038-1	Electrostrictive Graft Elastomers And Processing
LAR-16039-1	Shaping, Tuning, And Positioning Membrane Structures
LAR-16079-1	Liquid Crystalline Thermosets From Oligo-Esters, Ester-Imides And Ester-Amides
LAR-16219-1	Shaping, Tuning, And Positioning Membrane Structures Using Electroactive Polymer Actuators
LAR-16220-1	Shaping, Tuning, And Positioning Membrane Structures Using Electroactive Polymer Actuators
LAR-16232-1-NP	Piezoelectric-Electrostrictive Polymeric Blends For Sensor And Actuation Dual Functionality
LAR-16279-1	Carbon Nanotube Based High Bandwidth Imaging And Sensing Device
LAR-16289-1	Active Diaphragms Using Inter-Circulating Electrodes
LAR-16307-1-SB	Methodology For The Effective Stabilization Of Tin-Oxide-Based Oxidation/Reduction Catalysts
LAR-16311-1	Heat, Moisture, Chemical Resistant Polyimide Compositions And Methods For Making And Using The Same
LAR-16363-1	Radial Electric Field Piezo-Diaphragm Fluidic Control Systems
LAR-16390-1-SB	Ruthenium Stabilization Mechanism For Next Generation Oxidation And Reduction Catalyst Systems
LAR-16430-1-NP	Polyimides From 2,3,3',4'-Biphenyltetracarboxylic Dianhydride And Aromatic Diamines
LAR-16437-1-NP	Templated Growth Of Carbon Nanotubes

LAR-16475-1	Carbon Nanotube-Based Structural Health Monitoring Sensor
LAR-16615-1	Polyimide Foams
LAR-16698-1	High Performance High Efficiency Hybrid Actuator Systems (HYBAS)
LAR-16854-1	Ultrasonic Method And Means To Assess Compartment Syndrome Part B
LAR-16867-1	Electroactive polymer-carbon nanotube-ceramic nanocomposites
LAR-16868-1	Lattice Matched SiGe Layer On Single Crystalline Sapphire Substrate
LAR-16877-1	Double-Vacuum Bag (DVB) Process For Volatile Management In Resin Matrix Composite Manufacturing
LAR-17032-1	A New Concept For Active Bistable Twisting Structures
LAR-17169-1	Hybrid Force/Stress Amplified Piezoelectric Energy Harvesting Transducer System